

इंटरनेट

मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 11654-1 (1986): Flexible insulating sleeving, Part 1: Definitions and general requirements [ETD 2: Solid Electrical Insulating Materials and Insulation Systems]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE



Indian Standard

**SPECIFICATION FOR
FLEXIBLE INSULATING SLEEVING**

PART 1 DEFINITIONS AND GENERAL REQUIREMENTS

UDC 621.315.616.462



© Copyright 1986

INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard

SPECIFICATION FOR FLEXIBLE INSULATING SLEEVING

PART 1 DEFINITIONS AND GENERAL REQUIREMENTS

Soild Electrical Insulating Materials Sectional Committee, ETDC 63

Chairman

SHRI A. S. LAKSHMANAN

Representing

Senapathy Whiteley Ltd, Bangalore

Members

SHRI B. A. GOVINDARAJ (*Alternate to*
Shri A. S. Lakshmanan)

SHRI S. B. BAPAT Dr Beck & Co (India) Ltd, Pune

SHRI R. S. LAAD (*Alternate*)

SHRI S. M. DASTUR Fibre-Glass Pilkington Ltd, Bombay

SHRI R. K. AGARWAL (*Alternate*)

SHRI V. B. DESAI Jyoti Ltd, Vadodara

SHRI B. G. SHARMA (*Alternate*)

DIRECTOR (HTD-VIII) Central Electricity Authority, New Delhi

DIRECTOR (TED) (*Alternate*)

DIRECTOR GENERAL Central Power Research Institute, Bangalore

SHRI K. S. ARUNACHALA SASTRY (*Alternate*)

LT-COL J. G. GOGATE Ministry of Defence (DGI)

MAJ J. SEBASTIAN (*Alternate*)

SHRI P. N. HIRIYANNATH Kirloskar Electric Co Ltd, Bangalore

SHRI G. UMESH (*Alternate*)

JOINT DIRECTOR STANDARDS Research, Designs and Standards Organization,
ELECTRICAL/3 Lucknow

ADDITIONAL DIRECTOR

ELECTRICAL/B1 (*Alternate*)

SHRI B. MUKHOPADHYAYA National Test House, Calcutta

SHRI P. C. PRADHAN (*Alternate*)

DR M. S. PADBIDRI Hindustan Brown Boveri Ltd, Bombay

DR P. SATYANARAYANA (*Alternate*)

SHRI R. P. PATIL NGEF Ltd, Bangalore

SHRI ASWATHANARAYANA (*Alternate*)

SHRI S. W. PATWARDHAN Formica India Division, The Bombay Burmah Trading Corporation Ltd, Pune

SHRI V. RANGANATHAN (*Alternate*)

DR G. M. PHADKE Indian Electrical Manufacturers' Association,
Bombay

SHRI K. K. GOSAIN (*Alternate*)

(Continued on page 2)

© Copyright 1986

INDIAN STANDARDS INSTITUTION

This publication is protected under the *Indian Copyright Act* (XIV of 1957) and reproduction in whole or in part by any means except with written permission of the publisher shall be deemed to be an infringement of copyright under the said Act.

IS : 11654 (Part 1) - 1986

(Continued from page 1)

Members

DR T. S. RAMU	Indian Institute of Science (CSIR), Bangalore
PROF V. PRABHASHANKER (<i>Alternate</i>)	
SHRI D. S. SAHNEY	Sahney Kirkwood Pvt Ltd, Pune
SHRI K. S. KAPOOR (<i>Alternate</i>)	
SHRI C. C. SAKARDA	Permali Wallace Ltd, Bhopal
DR L. C. ANAND (<i>Alternate</i>)	
SHRI CHARANJIT SINGH	Directorate General of Supplies and Disposals, New Delhi
SHRI P. N. SRIVASTAVA	Bharat Heavy Electricals Ltd, Hyderabad
SHRI B. SUDARSAN (<i>Alternate I</i>)	
SHRI P. V. BHAT (<i>Alternate II</i>)	
SHRI K. T. THANAWALA	Jhaveri Thanawala Corporation, Bombay
SHRI KINUAL THANAWALA (<i>Alternate</i>)	
SHRI J. M. UJIA	Directorate General of Technical Development, New Delhi
DR J. VAID	Peico Electronics & Electricals Ltd, Bombay
DR L. RAMAKRISHNA (<i>Alternate</i>)	
SHRI Y. S. VENKATESWARAN	Lakshmanan Isola Ltd, Ramanagaram
SHRI S. P. SACHDEV, Director (Elec tech)	Director General, ISI (<i>Ex-officio Member</i>)

Representing

Secretary

SHRI V. DEWAN
Deputy Director (Elec tech), ISI

Indian Standard

SPECIFICATION FOR FLEXIBLE INSULATING SLEEVING

PART 1 DEFINITIONS AND GENERAL REQUIREMENTS

0. FOREWORD

0.1 This Indian Standard (Part 1) was adopted by the Indian Standards Institution on 28 April 1986, after the draft finalized by the Solid Electrical Insulating Materials Sectional Committee had been approved by the Electrotechnical Division Council.

0.2 It is intended to bring out a series of standards on flexible insulating sleeveings. This series will cover the following in various parts:

Part 1 Definitions and general requirements

Part 2 Methods of test

Part 3 Specifications for individual types of sleeveings

0.2.1 This standard (Part 1) covers the definitions and general requirements of flexible insulating sleeving.

0.3 Polyvinyl chloride sleeveings and varnish impregnated cotton sleeveings for electrical purposes are at present covered in IS : 1951-1961* and IS : 3765-1966†. With the publication of relevant sections under Part 3 of the standard, these standards will be withdrawn.

0.4 In the preparation of this standard, assistance has been derived from IEC Pub 684-1(1980) 'Flexible insulating sleeving: Part 1 Definitions and general requirements', issued by the International Electrotechnical Commission (IEC).

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960‡. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Specification for polyvinyl chloride sleeving for electrical purposes.

†Specification for varnish impregnated cotton sleeveings for electrical purposes.

‡Rules for rounding off numerical values (revised).

1. SCOPE

1.1 This standard is applicable to flexible insulating sleeving including heat-shrinkable sleeving, intended primarily for insulating conductors and connections of electrical apparatus. Some types of sleeving are also suitable for holding together and covering a number of individually insulated conductors.

2. DEFINITIONS

2.0 For the purpose of this standard, the definitions given in IS : 1885 (Part 62)-1985* shall apply in addition to the following.

2.1 Central Value — The middle result of an odd number of tests or the mean of the two middle results of an even number of tests when arranged in order of magnitude.

2.2 Consignment — All material of one size, type, grade and colour submitted for delivery at the time.

3. CLASSIFICATION AND DESIGNATION

3.1 Classification — Sleeving is classified by the numbering of section of individual specifications in Part 3. In this, the first digit indicates the basic type of sleeving that is:

- 1 : normally made by extrusion but excluding heat-shrinkable,
- 2 : heat-shrinkable,
- 3 : textile fibre; uncoated,
- 4 : textile fibre; coated, and
- 5 to 9 : for later allocation.

When ordering sleeving, purchasers should include this standard number followed by the section number in Part 3 and its title and any additional requirements, for example, section 101 extruded PVC, temperature index 90. (The second and third digits are used only to differentiate between sleeveings of 1 : type and have no other significance).

4. SPECIMENS

4.1 Sufficient sleeving for the required tests shall be selected in such a manner as to be representative of the whole consignment. Each size, type or colour in a delivery shall be regarded as a separate consignment unless otherwise agreed between the purchaser and the supplier.

*Electrotechnical vocabulary: Part 62 Solid insulating materials.

5. GENERAL REQUIREMENTS

5.1 All material in one consignment shall be as consistent as possible and have properties within the limits of this standard throughout the consignment.

6. DIMENSIONS

6.1 Length — Sleeveings shall be supplied in either continuous or cut lengths as agreed between the purchaser and the supplier. Preferred package lengths, in metres, for continuous lengths are:

1, 10, 25, 50, 100, 200 and 400.

6.2 Bore — For round cross-sections, the preferred nominal bore diameters, in millimetres, are as follows, but not all these bore diameters are available in every type of sleeveings.

0.3, 0.5, 0.8, 1.0, 1.5, 2, 2.5, 3, 4, 5, 6, 8, 10, 12, 16, 20, 25, 30, 40, 50.

Other preferred sizes may be selected from the R10 series.

6.3 Wall Thickness — The wall thickness appropriate to each type of sleeving is given in Part 3 of this standard.

6.4 Tolerances — The tolerances of dimensions appropriate to each type of sleeveings are given in Part 3 of this standard.

7. COLOUR AND TRANSPARENCY

7.1 Sleeving shall be applied in natural or coloured form. When two or more colours are used, each shall cover sufficient area of the surface to allow ready identification in normal daylight.

For coloured sleeving, the colour(s) shall be a reasonable match to one of those specified in IS : 5831-1984*.

Sleeving which is required to be transparent may be coloured and shall comply with the requirements of Part 3 of this standard.

8. FINISH

8.1 The sleeving shall be uniform in appearance, reasonably smooth and free from internal and external irregularities.

8.2 The coating material of coated textile sleeving shall be uniform and continuous and shall adhere firmly to the textile fibre.

8.3 There shall be no defects capable of affecting the characteristics specified in Part 3 of this standard.

*Specification for PVC insulation and sheath of electric cables (*first revision*).

9. PACKAGING

9.1 Sleeving shall be supplied in such a way as to ensure adequate protection during transport, handling and storage. Continuous lengths of sleeving over 2 m shall be wound evenly and compactly on reels or in coils suitably secured unless an alternative form of packaging such as containers or dispensers is required by the purchaser. If the contents of a reel consist of more than one length, a slip of paper extending across the width of the reel may be inserted between the layers to indicate the commencement of a fresh length of sleeving.

10. MARKING

10.1 Each unit pack shall have the following information clearly and indelibly marked on it:

- a) The number of this standard and its section number in Part 3;
- b) When supplied in continuous length, the length of sleeving on each reel or coil and when supplied in cut lengths, the length and number of sleeves in the package;
- c) The nominal bore diameter and, if applicable, the wall thickness of the sleeving;

NOTE — Heat-shrinkable sleeving is identified by the minimum supplied diameter and the fully recovered diameter.

- d) The colour of the sleeving (unless in transparent package);
- e) Supplier's name and/or mark; and
- f) Additional information required by the purchaser (for example, maximum voltage, maximum surface temperature, unsuitability for particular environments such as oil and grease).

10.1.1 Each package containing a number of unit packs shall, in addition, give the number of reels or coils.

10.1.2 Each unit pack may also be marked with ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.